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EXAMINER	
MOLINARI, MICHAEL J	

ART UNIT	PAPER NUMBER
2665	7

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/811,204	BADAMO ET AL.	
	Examiner	Art Unit	
	Michael J Molinari	2665	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on 22 August 2002.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-44 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-44 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

1. Claim 42 is objected to because of the following informalities: Line 11 of the claim repeats the words "step of". Appropriate correction is required.

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Regarding claim 17, the phrases "can make use of" and "may exist" render the claim indefinite because it is unclear whether the limitations following the phrase are part of the claimed invention. See MPEP § 2173.05(d).

3. Regarding claim 20, the phrases "can make use of" and "may exist" render the claim indefinite because it is unclear whether the limitations following the phrase are part of the claimed invention. See MPEP § 2173.05(d).

4. Regarding claim 23, the phrase "can send" renders the claim indefinite because it is unclear whether the limitations following the phrase are part of the claimed invention. See MPEP § 2173.05(d).

5. Claim 29 recites the limitation "said fast path processor system" in line 1. There is insufficient antecedent basis for this limitation in the claim. It should be changed to "said fast path processor subsystem".

6. Regarding claim 37, the phrases "can make use of" and "may exist" render the claim indefinite because it is unclear whether the limitations following the phrase are part of the claimed invention. See MPEP § 2173.05(d).

7. Regarding claim 37, the phrase "may be" renders the claim indefinite because it is unclear whether the limitations following the phrase are part of the claimed invention. See MPEP § 2173.05(d).

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

9. Claims 1-7, 11-13, 15-21, 23-29, 32-35, 37-42, and 44 are rejected under 35 U.S.C. 102(b) as being anticipated by Beasley (U.S. Patent No. 5,949,785).

10. Referring to claim 1, Beasley discloses a network gateway device (see column 10, lines 25-47), comprising: a physical interface for connection to a medium (Adapter Card Ports); an ingress processor system for ingress processing of all or part of packets received from said physical interface and for sending ingress processed packets for egress processing (Adapter Cards); an egress processor system for receiving ingress processed packets and for egress processing of all or part of received packets for sending to the physical interface (Adapter Cards); interconnections including an interconnection between said ingress processor system and said egress processor system (Back Plane), an interconnection between said ingress processor

system and said physical interface (see column 10, lines 25-47) and an interconnection between said egress processor system and said physical interface (see column 10, lines 25-47).

11. Referring to claim 2, Beasley discloses a packet queue establishing a queue of packets location awaiting transmission, said packet queue being the exclusive buffer location for packets between packets entering the device and packet transmission (see Abstract).

12. Referring to claim 3, Beasley discloses that packets exit the device at a rate of the line established at the physical interface (see column 19, lines 45-67, column 20, lines 1-13, and column 21, lines 20-33).

13. Referring to claim 4, Beasley discloses that said ingress processing system processes packets including at least one or more of protocol translation, de-encapsulation, decryption, authentication, point-to-point protocol (PPP) termination and network address translation (NAT) and said egress processing system processes packets including at least one or more of protocol translation, encapsulation, encryption, generation of authentication data, PPP generation and NAT (see column 10, lines 25-47).

14. Referring to claim 5, Beasley discloses that said ingress processor system includes a fast path processor subsystem processing packets at speeds greater than or equal to the rate at which they enter the device (see column 22, lines 58-67 and column 23, lines 1-42).

15. Referring to claim 6, Beasley discloses that said fast path processor system provides protocol translation processing converting packets from one protocol to another protocol (see column 10, lines 25-47 and column 21, lines 20-33).

16. Referring to claim 7, Beasley discloses that said egress processor system includes a fast path processor subsystem processing packets at speeds greater than or equal to the rate at which they are to leave the device (see column 22, lines 58-67 and column 23, lines 1-42).

17. Referring to claim 11, Beasley discloses that said ingress processor system includes a control packet processor for additional packet processing concurrently with fast path processor packet processing, including processing packets signaling the start and end of data sessions, packets used to convey information to a particular protocol and packets dependent on interaction with external entities (see column 8, lines 57-65).

18. Referring to claim 12, disclose that said physical interface includes a line card and said ingress processor system is provided as part of a service card and said egress processor system is provided in one of said service card and another service card and said interconnections include: a line card bus connected to said line card; a service card bus connected to at least one of said service card and said another service card; and a switch fabric connecting said line card to at least one of said service card and said another service card (see column 8, lines 44-65 and column 10, lines 26-47).

19. Referring to claim 13, Beasley discloses that said service card includes said ingress processor system and said egress processor system and said another service card includes another ingress processor system for processing all or part of packets received from said line card and for sending ingress processed packets for egress processing and another egress processor system for receiving ingress processed packets and for processing all or part of received packets for sending to said line card, whereby packets may be sent between service cards for ingress processing by

one service card and egress processing by another service card or for ingress processing using more than one service card (see column 8, lines 44-65 and column 10, lines 26-47).

20. Referring to claim 15, Beasley discloses that said physical interface includes another line card connected by said switch fabric to at least one of said service card and said another service card (see column 8, lines 44-65 and column 10, lines 26-47).

21. Referring to claim 16, Beasley discloses that said switch fabric connects any one of said line cards to any one of said service cards, whereby any line card can send packet traffic to any service card and routing of packet traffic is configured one of statically and dynamically by the said line card (see column 8, lines 44-65 and column 10, lines 26-47).

22. Referring to claim 17, Beasley discloses that said service card bus includes a static bus part for connection of one of said service cards through said switch fabric to one of said line cards and a dynamic bus for connecting a service card to another service card through said fabric card allowing any service card to send packet traffic requiring ingress processing to any other service card for ingress processing and allowing any service card to send traffic requiring egress processing to any other service card for egress processing, whereby the system can make use of unused capacity that may exist on the other service cards (See Figure 1 and column 1, lines 12-67).

23. Referring to claim 18, Beasley discloses a network gateway device, comprising: a plurality of line cards having a physical interface for connection to a medium; and a plurality of service cards, each service card including an ingress processor for processing all or part of data received from one of said line cards and for sending ingress processed packets for egress processing and each of said service cards including an egress processor for receiving ingress

processed packets and for processing all or part of received packets for sending to one of said line cards; a line card bus connected to each of said line cards; a service card bus connected to each of said service cards; and a switch fabric connecting individual line cards to individual service cards, whereby packets may be sent between service cards for ingress processing by one service card and ingress processing by another service card or for shared ingress processing between more than one service card (see Figure 1 and column 10, lines 25-47).

24. Referring to claim 19, Beasley discloses a network gateway device, comprising: a first line card; a first service card for packet processing including a first ingress processing system for at least one or more of de-encapsulation and decryption and a first egress processing system for at least one or more of encapsulation and encryption; a second line card; a second service card for packet processing including a second ingress processing system for at least one or more of de-encapsulation and decryption and a second egress processing system for at least one or more of encapsulation and encryption; a switch fabric and connection interfaces connecting at least said first line card to said first service card, connecting said second line card to said second service card and connecting said first service card to said second service card (see Figure 1 and column 10, lines 25-47).

25. Referring to claim 20, Beasley discloses that said connection interfaces include a static bus part for connection of one of said service cards through said switch fabric to one of said line cards and a dynamic bus for connecting a service card to another service card through said fabric card allowing any service card to send packet traffic requiring ingress processing to any other service card for ingress processing and allowing any service card to send traffic requiring egress

processing to any other service card for egress processing, whereby the system can make use of unused capacity that may exist on other service cards (see Figure 1 and column 10, lines 25-47).

26. Referring to claim 21, Beasley discloses that each of said first ingress processing subsystem, said first egress processing subsystem, said second ingress processing subsystem and said second egress processing subsystem include physically separate packet processing (see Figure 1 and column 10, lines 25-47).

27. Referring to claim 23, Beasley discloses that said switch fabric connects any one of said line cards to any one of said service cards, whereby any line card can send packet traffic to any service card and routing of packet traffic is configured one of statically and dynamically to establish virtual traffic segregation for segregating traffic using one or more common service card and line card and to establish physical traffic segregation wherein traffic is segregated using groups of one or more service card and one or more line card (see Figure 1 and column 10, lines 25-47).

28. Referring to claim 24, Beasley discloses that said switch fabric connects any one of said line cards to any one of said service cards, whereby any line card can send packet traffic to any service card and routing of packet traffic is configured one of statically and dynamically by said line card (see column 10, lines 25-47).

29. Referring to claim 25, Beasley discloses a network gateway process, comprising: receiving packets from a network via a physical interface connected to a medium; ingress processing of packets, with an ingress processing system, including one or more of protocol translation processing, de-encapsulation, decryption, authentication, point-to-point (PPP) termination and network address translation (NAT); transferring packets to an egress packet

processing subsystem; egress processing said packets, with the egress processing system, including one or more of protocol translation, encapsulation, encryption, generation of authentication data, PPP generation and NAT processing (see column 10, lines 25-47).

30. Referring to claim 26, Beasley discloses establishing a queue of packets awaiting transmission; and transmitting queued packets via the physical interface, said packet queue being the exclusive buffer for packets between packets entering the ingress processing system and packet transmission (see Abstract).

31. Referring to claim 27, Beasley discloses that packets are processed by said ingress processor at a rate of ingress at the physical interface (see column 19, lines 45-67, column 20, lines 1-13, and column 21, lines 20-33).

32. Referring to claim 28, Beasley discloses that said ingress processor system includes a fast path processor subsystem processing packets at speeds greater than or equal to the rate at which packets enter the ingress processor system (see column 22, lines 58-67 and column 23, lines 1-42).

33. Referring to claim 29, Beasley discloses that said fast path processor system provides protocol translation processing converting packets from one protocol to another protocol (see column 10, lines 25-47).

34. Referring to claim 32, Beasley discloses that said ingress processor system includes a control packet processor for additional packet processing concurrently with fast path processor packet processing, including processing packets signaling the start and end of data sessions, packets used to convey information to a particular protocol and packets dependent on interaction with external entities (see column 8, lines 57-65).

35. Referring to claim 33, Beasley discloses providing said physical interface including a line card; providing said ingress processor system as part of a service card; providing said egress processor system is provided in one of the service card and another service, providing a line card bus connected to the line card; providing a service card bus connected to at least one of the service card and the another service card; and providing a switch fabric connecting the line card to at least one of the service card and the another service card (see column 8, lines 44-65 and column 10, lines 26-47).

36. Referring to claim 34, Beasley discloses providing said ingress processor system and said egress processor system as part of said service card; providing another service card with another ingress processor system for processing all or part of packets received from said line card and for sending ingress processed packets for egress processing and another egress processor system for receiving ingress processed packets and for processing all or part of received packets for sending to the line card; sending packets between service cards for ingress processing by one service card and egress processing by another service card or for ingress processing using more than one service card (see column 10, lines 26-47).

37. Referring to claim 35, Beasley discloses providing another line card as part of said physical interface; connecting said another line card, via said switch fabric to at least one of said service card and said another service card (see column 10, lines 26-47).

38. Referring to claim 36, Beasley discloses using said switch fabric to connect any one of said line cards to any one of said service cards, whereby any line card can send packet traffic to any service card and routing of packet traffic is configured one of statically and dynamically by the said line card (see column 10, lines 26-47).

39. Referring to claim 37, Beasley discloses providing said service card bus as a static bus for connection to one of said service cards through said switch fabric to one of said line cards and a dynamic bus for connecting a service card to another service card through said fabric card allowing any service card to send packet traffic requiring ingress processing to any other service card for ingress processing and allowing any service card to send traffic requiring egress processing to any other service card for egress processing, whereby the system can make use of unused capacity that may exist on other service cards (See Figure 1 and column 1, lines 12-67).

40. Referring to claim 38, Beasley discloses receiving packets from a network with a first packet protocol as part of said step of receiving packets; using a first module ingress processing subsystem for said step of ingress processing of packets to produce end-to-end packets; transferring the end-to-end packets to a second module egress packet processing subsystem; using a second module egress processing subsystem for egress packet processing to produce packets for sending to a network with a second packet protocol; receiving packets from the network with the second packet protocol; using a second module ingress processing subsystem for ingress processing to produce end-to-end packets; transferring the end-to-end packets to a first module egress processing subsystem; using the first module egress packet processing subsystem for egress packet processing to produce packets for sending to the network with the first packet protocol (see column 10, lines 26-47).

41. Referring to claim 39, Beasley discloses that the first module is a service card for packet processing with the ingress processing subsystem separate from the egress processing subsystem and the second module is a service card for packet processing with the ingress processing subsystem separate from the egress processing subsystem (see column 10, lines 26-47).

42. Referring to claim 40, Beasley disclose providing a switch fabric; connecting a first line card to the switch fabric via a bus, the first line card providing a network interface; connecting the first service card to the switch fabric via a bus; connecting a second line card to the switch fabric via a bus, the second line card providing a network interface with the first packet protocol; connecting the second service card to the switch fabric via a bus; transferring packets from the first line card to the first service card via the fabric card and connected busses; transferring packets from the first service card to the second service card via the fabric card and connected busses; transferring packets from the second service card to the second line card via the fabric card and connected busses (see Figure 1 and column 10, lines 26-47).

43. Referring to claim 41, Beasley discloses transferring packets from the second line card to the second service card via the fabric card and connected busses; transferring packets from the second service card to the first service card via the fabric card and connected busses; transferring packets from the first service card to the first line card via the fabric card and connected busses (see Figure 1 and column 10, lines 26-47).

44. Referring to claim 42, Beasley discloses providing a switch fabric; connecting a first line card to the switch fabric via a bus, the first line card providing a network interface; connecting a first service card to the switch fabric via a bus; connecting a second line card to the switch fabric via a bus, the second line card providing a network interface; connecting a second service card to the switch fabric via a bus, the second line card providing a network interface; connecting a second service card to the switch fabric via a bus; transferring packets from the first line card to the first service card; processing packets at the first service card including one or more of de-encapsulation and decryption as part of said step of ingress processing of packets; transferring

packets from the first service card to the second service card; processing packets at the second service card including one or more of encapsulation and encryption as part of said step of egress processing packets; transferring packets from the second service card to the second line card (see Figure 1 and column 10, lines 26-47).

45. Referring to claim 44, Beasley discloses segregating traffic including physical segregating data traffic using one or more service card and one or more line card with traffic flows segregated from data traffic on one or more other service card and one or more other line card (see Figure 1 and column 10, lines 25-47).

Claim Rejections - 35 USC § 103

46. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

47. Claims 8, 9, 30, and 43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Beasley (U.S. Patent No. 5,949,785) in view of Pullen et al. (U.S. Patent No. 6,038,228).

48. Referring to claims 8, 9, and 30 Beasley differs from claims 8 and 9 in that he fails to disclose that said ingress processor system includes a security processor subsystem for processing security packets requiring one or more of decryption and authentication, said processing occurring concurrently with fast path processor packet processing. However, processors for encryption and decryption are old and well known in the art. For example, Pullen et al. teach the use of processors for encryption and decryption (see column 8, lines 33-40),

which have the advantage of providing secure communication. One skilled in the art would have recognized the advantage of using a processor for encryption and decryption as taught by Pullen et al. Therefore, it would have been obvious to a person with ordinary skill in the art at the time of the invention to incorporate the use of a processor for encryption and decryption as taught by Pullen et al. into the invention of Beasley to achieve the advantage of providing secure communication.

49. Referring to claim 43, Beasley discloses that each of said first service card and said second service card process ingress packets from a line card, including encapsulation processing separate from processing egress packets to a line card, including de-encapsulation and decryption with separate processing subsystems. Beasley differs from claim 43 in that he fails to disclose performing encryption in the line card. However, encryption and decryption are old and well known in the art. For example, Pullen et al. teach the use of processors for encryption and decryption in a line card (see column 8, lines 33-40), which have the advantage of providing secure communication. One skilled in the art would have recognized the advantage of using a processor for encryption and decryption as taught by Pullen et al. Therefore, it would have been obvious to a person with ordinary skill in the art at the time of the invention to incorporate the use of a processor for encryption and decryption as taught by Pullen et al. into the invention of Beasley to achieve the advantage of providing secure communication.

50. Claims 10 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Beasley (U.S. Patent No. 5,949,785) in view of Redlich (6,591,306).

51. Referring to claims 10 and 31, Beasley differs from claims 10 and 31 in that he fails to disclose that said ingress processor system includes a special care packet processor for additional

packet processing concurrently with fast path processor packet processing, said special care packet processor processing packets including one or more of network address translation (NAT) processing and NAT processing coupled with application layer processing (NAT-ALG). However, NAT processing is old and well known in the art for use in gateway systems such as that taught by Beasley. For example, Redlich teaches the use of NAT, which has the advantage of facilitating communication between two networks using different protocols (see column 13, lines 53-67 and column 14, lines 1-18).

52. Claims 14 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Beasley (U.S. Patent No. 5,949,785) in view of Teraslinna (U.S. Patent No. 5,229,990).

53. Referring to claims 14 and 22, Beasley differs from claims 14 and 22 in that he fails to disclose that each of said service cards is identical and a spare service card is provided, for functionally replacing any one of the other service cards to provide redundancy. However, Providing spare cards for redundancy is old and well known in the art. For example, Teraslinna teaches just such a concept (see column 1), which has the advantage of increasing reliability (see column 1, line 13). One skilled in the art would have recognized the advantage of using spare cards as taught by Teraslinna. Therefore, it would have been obvious to a person with ordinary skill in the art at the time of the invention to incorporate the use of spare cards as taught by Teraslinna into the invention of Beasley to achieve the advantage of increasing reliability.

Conclusion

54. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

55. U.S. Patent No. 6,101,543 to Alden et al. teaches a pseudo network adapter for frame capture, encapsulation, and encryption.

56. U.S. Patent No. 6,680,933 to Cheesman et al. teaches a method of routing network traffic through a network switch.

57. U.S. Patent No. 4,727,495 to Cheetham et al. teaches a data communication system with a plurality of line cards and a single service card.

58. U.S. Patent No. 5,276,684 to Pearson teaches an arrangement of cards and backplane with separate ingress and egress processing.

59. U.S. Patent No. 5,781,320 to Byers teaches a network switch architecture that multiplexes the communications between the plurality of cards.

60. U.S. Patent No. 5,615,211 to Santore et al. teaches a network switch with a TDM backplane for transferring packets between cards.

61. U.S. Patent No. 6,272,129 to Dynarski et al. teaches a switch architecture using separate cards for interfaces and processing.

62. U.S. Patent No. 5,495,478 to Wilkinson et al. teaches a switch architecture using different cards for line interfaces and ingress and egress processing.

63. U.S. Patent No. 6,259,699 to Opalka et al. teaches a switch architecture separating physical layer processing, policing functions, and buffering before transferring data to the backplane and then on for further buffering, egress processing, and physical layer processing.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael J Molinari whose telephone number is (703) 305-5742. The examiner can normally be reached on Monday-Thursday 8am-6:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Huy Vu can be reached on (703) 308-6602. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Michael Joseph Molinari

ALPUS H. HSU
PRIMARY EXAMINER